

What is claimed is:

1. An electric breast pump including:
  - at least one hood member adapted to be fitted over a breast of a user;
  - a chamber adapted to be in fluid communication with said hood member *via* a first
  - 5 valve;
  - a first motor operatively associated with a pumping member which is movable to draw air from said hood member into said chamber *via* said first valve;
  - said chamber having at least a first opening and a closure member operatively associated with said first motor,
  - 10 wherein said closure member is movable between a first position to close said first opening and a second position in which said first opening is open;
  - and wherein said closure member is at said first position when said first motor is in operation and is at said second position when said first motor is not in operation.
2. A breast pump according to Claim 1 wherein said closure member is biased towards said
- 15 second position.
3. A breast pump according to Claim 2 wherein said closure member is biased towards said second position by a spring member.
4. A breast pump according to Claim 1 wherein said first valve is a one-way valve.
5. A breast pump according to Claim 1 wherein said first motor is engaged with said closure
- 20 member *via* at least one ring-shaped structure.
6. A breast pump according to Claim 5 wherein said ring-shaped structure is movable between a stable first configuration to which said ring-shaped structure is biased and a second configuration in which said closure member is allowed to occupy said first position.
- 25 7. A breast pump according to Claim 5 wherein said ring-shaped structure is at said stable first configuration when said first motor is not in operation and at said second configuration when said first motor is in operation.
8. A breast pump according to Claim 7 wherein said ring-shaped structure rotates when said first motor is in operation.
- 30 9. A breast pump according to Claim 8 wherein said ring-shaped structure moves from said first configuration to said second configuration by centrifugal force when said ring-shaped structure rotates.

10. A breast pump according to Claim 1 wherein said chamber includes at least a second opening closable by a second valve.
11. A breast pump according to Claim 10 wherein said second valve is a one-way valve.
12. A breast pump according to Claim 11 wherein said second valve only allows air to exit  
5 said chamber.
13. A breast pump according to Claim 1 further including an adjustment member manually operable to adjust the air pressure in said hood member.
14. A breast pump according to Claim 13 wherein said adjustment member includes a third valve member in fluid communication with said hood member.
- 10 15. A breast pump according to Claim 14 wherein said adjustment member further includes a wheel member manually operable to adjust the amount of air allowed to enter the third valve.
16. A breast pump according to Claim 1 further including a fourth valve in fluid communication with the hood member.
- 15 17. A breast pump according to Claim 16 further including a second motor for selectively opening or closing said fourth valve.
18. A breast pump according to Claim 16 wherein, during operation of said breast pump, said fourth valve is openable to release the vacuum in said hood member.
19. A breast pump according to Claim 1 further including at least one sensing unit adapted to  
20 detect the passing of milk.
20. A breast pump according to Claim 19 further including a data processing unit adapted to calculate the rate of flow of milk on the basis of data received from said sensing unit.
21. A breast pump according to Claim 19 wherein said sensing unit includes at least one infrared (IR) transmitter and an IR receiver adapted to receive IR signals from said IR  
25 transmitter.
22. A breast pump according to Claim 19 further including at least a second sensing unit.
23. A breast pump according to Claim 22 wherein said first and second sensing units are arranged in series in the path of flow of milk in said breast pump.
24. A breast pump according to Claim 23 further including a timer for determining the time  
30 duration between when passing of milk is detected by said first sensing unit and when passing of milk is detected by said second sensing unit.
25. A breast pump according to Claim 21 wherein IR signals transmitted by said IR

transmitter are prevented from being received by said IR receiver upon passing of milk therebetween.

26. A breast pump according to Claim 19 further including a display for visually indicating the general rate of flow of milk into said breast pump.

5 27. A breast pump according to Claim 20 wherein said data processing unit is adapted to calculate the remaining time required for filling a receptacle of milk associated with said breast pump.

28. A breast pump according to Claim 20 wherein the frequency of movement of said pumping member is adapted to be varied on the basis of the rate of flow of milk calculated by  
10 said data processing unit.

29. A breast pump according to Claim 25 wherein said first motor is adapted to stop operation when IR signals transmitted by said IR transmitter are prevented from being received by said IR receiver for a predetermined period of time.

30. An electric breast pump including:

15           at least one hood member adapted to be fitted over a breast of a user;  
            at least a first sensing unit adapted to detect the passing of milk.

31. An electric breast pump according to Claim 30 further including a data processing unit adapted to calculate the rate of flow of milk on the basis of data received from said sensing unit.

32. A breast pump according to Claim 30 wherein said sensing unit includes at least one  
20 infrared (IR) transmitter and an IR receiver adapted to receive IR signals from said IR transmitter.

33. A breast pump according to Claim 30 further including at least a second sensing unit.

34. A breast pump according to Claim 33 wherein said first and second sensing units are arranged in series in the path of flow of milk in said breast pump.

25 35. A breast pump according to Claim 34 further including a timer for determining the time duration between when passing of milk is detected by said first sensing unit and when passing of milk is detected by said second sensing unit.

36. A breast pump according to Claim 32 wherein IR signals transmitted by said IR transmitter are prevented from being received by said IR receiver upon passing of milk  
30 therebetween.

37. A breast pump according to Claim 31 further including a display for visually indicating the general rate of flow of milk into said breast pump.

38. A breast pump according to Claim 31 wherein said data processing unit is adapted to calculate the remaining time required for filling a receptacle of milk associated with said breast pump.

39. A breast pump according to Claim 31 further including a first motor operatively associated with a pumping member, wherein the frequency of movement of said pumping member is adapted to be varied on the basis of the rate of flow of milk calculated by said data processing unit.

40. A breast pump according to Claim 36 wherein said first motor is adapted to stop operation when IR signals transmitted by said IR transmitter are prevented from being received by said IR receiver for a predetermined period of time.

41. A breast pump according to Claim 30 further including:

a chamber adapted to be in fluid communication with said hood member *via* a first valve;

a first motor operatively associated with a pumping member which is movable to draw air from said hood member into said chamber *via* said first valve;

said chamber having at least a first opening and a closure member operatively associated with said first motor,

wherein said closure member is movable between a first position to close said first opening and a second position in which said first opening is open;

and wherein said closure member is at said first position when said first motor is in operation and is at said second position when said first motor is not in operation.

42. A breast pump according to Claim 41 wherein said closure member is biased towards said second position.

43. A breast pump according to Claim 42 wherein said closure member is biased towards said second position by a spring member.

44. A breast pump according to Claim 41 wherein said first valve is a one-way valve.

45. A breast pump according to Claim 41 wherein said first motor is engaged with said closure member *via* at least one ring-shaped structure.

46. A breast pump according to Claim 38 wherein said ring-shaped structure is movable between a stable first configuration to which said ring-shaped structure is biased and a second configuration in which said closure member is allowed to occupy said first position.

47. A breast pump according to Claim 46 wherein said ring-shaped structure is at said stable

first configuration when said first motor is not in operation and at said second configuration when said first motor is in operation.

- 48. A breast pump according to Claim 47 wherein said ring-shaped structure rotates when said first motor is in operation.
- 5 49. A breast pump according to Claim 48 wherein said ring-shaped structure moves from said first configuration to said second configuration by centrifugal force when said ring-shaped structure rotates.
- 50. A breast pump according to Claim 41 wherein said chamber includes at least a second opening closable by a second valve.
- 10 51. A breast pump according to Claim 50 wherein said second valve is a one-way valve.
- 52. A breast pump according to Claim 51 wherein said second valve only allows air to exit said chamber.
- 53. A breast pump according to Claim 41 further including an adjustment member manually operable to adjust the air pressure in said hood member.
- 15 54. A breast pump according to Claim 53 wherein said adjustment member includes a third valve member in fluid communication with said hood member.
- 55. A breast pump according to Claim 54 wherein said adjustment member further includes a wheel member manually operable to adjust the amount of air allowed to enter the third valve.
- 56. A breast pump according to Claim 41 further including a fourth valve in fluid  
20 communication with the hood member.
- 57. A breast pump according to Claim 56 further including a second motor for selectively opening or closing said fourth valve.
- 58. A breast pump according to Claim 56 wherein, during operation of said breast pump, said fourth valve is openable to release the vacuum in said hood member.